

NON-PUBLIC?: N
ACCESSION #: 8801190089

LICENSEE EVENT REPORT (LER)

FACILITY NAME: Hope Creek Generating Station PAGE: 1 of 4

DOCKET NUMBER: 05000354

TITLE: Reactor Scram Caused By A Spurious Spike In A Main Steam Line (MSL)
Radiation Monitor - Equipment Deficiency
EVENT DATE: 12/08/87 LER #: 87-051-00 REPORT DATE: 01/06/88

OPERATING MODE: 1 POWER LEVEL: 100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR
SECTION
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
NAME: A. M. Ervin, Lead Engineer - Technical TELEPHONE #: 609-339-5239

COMPONENT FAILURE DESCRIPTION:
CAUSE: B SYSTEM: AC COMPONENT: MON MANUFACTURER: G063
REPORTABLE TO NPRDS: N

SUPPLEMENTAL REPORT EXPECTED: No

ABSTRACT: On December 8, 1987 at 1405 hours, the Plant was in OPERATIONAL CONDITION 1 (Power Operation) at 100% power generating 1106 MWe when an automatic reactor scram occurred. Vessel level decreased to -18 in. following the scram and increased rapidly until all Reactor Feed Pumps tripped at +54 in. The Reactor scram was reset at 1409 hours at which time the reactor was stable. The root cause of this event was the common grounding of the "C" and "D" cabinets which provided a path for the spurious signal which resulted in the scram. Contributing causes were the faulty cable attachment at the "D" MSL Rad Monitor drawer connector which created the short to ground and the degraded physical condition of the cable and drawer. Corrective actions include an analysis of the MSL Rad Monitor grounding configuration for possible improvement and instruction of personnel in the importance of restoring instrument drawers to their original configuration.

(End of Abstract)

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PLANT AND SYSTEM IDENTIFICATION

General Electric - Boiling Water Reactor (BWR/4)
Nuclear Boiler and Reactor Recirculation System (EIS Designator:AC)

IDENTIFICATION OF OCCURRENCE

Unanticipated Reactor Scram Caused by a Spurious Spike in a Main
Steam Line (MSL) Rad Monitor - Equipment Deficiency

Event Date: December 8, 1987

Event time: 1405 Hours

This LER was initiated by Incident Report No. 87-202

CONDITIONS PRIOR TO OCCURRENCE

The plant was in OPERATIONAL CONDITION 1 (Power Operation) at
100% power generating 1106 MWe.

DESCRIPTION OF OCCURRENCE

On December 8, 1987 at 1405 hours, an automatic reactor scram occurred. No Emergency Core Cooling System or Primary Containment Isolation System actuations occurred during the event. The Nos. 1 and 2 Feedwater Heaters were isolated and manually bypassed. Vessel level decreased to -18 in. following the scram and increased rapidly until all Reactor Feed Pumps automatically tripped at +54 in. The Reactor scram was reset at 1409 hours at which time the reactor was stable. The plant was maintained in HOT STANDBY pending restart.

APPARENT CAUSE OF OCCURRENCE

The root cause of this event was the common grounding of the "C" and "D" cabinets which provided a path for the spurious signal which caused the scram. Contributing causes were the faulty cable attachment at the "D" MSL Rad Monitor drawer connector which created the short to ground and the degraded physical condition of the cable and drawer.

ANALYSIS OF OCCURRENCE

Just prior to the full scram, surveillance testing of the "F"

APRM and the "D" MSL Rad Monitor was in progress and a half scram was in. The "C" Rad Monitor spike which completed the scram logic was concurrent with the opening of the "D" MSL Rad Monitor drawer. Following the scram, the "C" Rad Monitor spike could be reproduced by opening the "D" MSL Rad Monitor drawer.

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ANALYSIS OF OCCURRENCE (Continued)

During the troubleshooting of the "C" and "D" MSL Rad Monitors the following conditions were observed:

1. Each of the four MSL Rad Monitor cabinets was individually grounded to the station ground, however a braided copper cable passing through the cabinet side wall connected the ground buses of the "C" and "D" cabinets. There was no connection between the ground buses of the "A" and "B" cabinets.
2. The "D" drawer cover quarter-turn fasteners were observed to be loose and to catch on the drawer front panel thereby making drawer opening difficult.
3. The "D" Rad Monitor signal cable was loosely attached to the connector at the back of the drawer. The cable would move in the connector when vigorous attempts were made to open the drawer since the cable was wrapped around the "D" drawer slide.

During troubleshooting it was determined that the spurious spike in the "C" MSL Rad Monitor was caused by a momentary high voltage signal generated when the "D" Rad Monitor cable shield contacted the cable center conductor. The spike occurred when the "D" drawer was opened, stressing the cable junction at the connector. The conductor carries a 240 VDC signal which was transmitted via the cable shield to the cabinet ground bus which was in turn connected to the "C" cabinet ground and thence to the "C" MSL Rad Monitor. Items 2 and 3 were corrected during the troubleshooting. After the troubleshooting, the spike could not be reproduced.

The as-found grounding of the Rad Monitor cabinets was compared with the system vendor drawings and discrepancies were identified. After consultation with the instrumentation vendor, it was determined that the as-found configuration of the MSL Rad

Monitor grounding is adequate but not optimum. The vendor determined that spikes such as the one which caused this scram are not a safety concern.

Several Control Room Integrated Display System (CRIDS) monitors were lost following the scram however the scram data was retrieved.

Incident Reports 86-037 (April 15, 1986) and 86-047 (April 25, 1987), reported on spurious signal spikes in RPS cabinets apparently caused by cable movement which resulted in scrams. This problem was corrected by a design change which restricted cable movement.

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ANALYSIS OF OCCURRENCE (Continued)

Incident Report 86-114 (July 4, 1986) reported on a scram resulting from a spurious signal in the RPS system when a half scram was already in as in the event described in this report and. The spurious signal also occurred in a cabinet supplied by the Reactor vendor. The root cause of spurious signal was never determined.

All safety systems operated as designed, demonstrating that these systems would have performed their design functions under more severe conditions, therefore the health and safety of the public were not compromised by this event.

This report is being submitted pursuant to the requirements of 10CFR50.73(a)(2)(iv).

CORRECTIVE ACTIONS

1. The loss of the CRIDS monitors will be investigated and any identified corrections will be made.
2. An analysis will be performed of the existing grounding configuration of the Reactor Protection System (RPS) cabinets containing the MSL Rad Monitors for possible improvement.
3. Personnel who perform surveillances or maintenance activities in the RPS cabinets will be instructed in the proper handling of the instrumentation drawers, and in the importance of restoring the drawer covers and fasteners to their

original condition following work activities.

4. All RPS cabinets will be inspected for wiring and mechanical faults and any degraded conditions discovered will be corrected.

Sincerely,
/s/S. LaBruna/Jan
S. LaBruna
General Manager
Hope Creek Operations
AME:
SORC Mtg. 87-181

ATTACHMENT # 1 TO ANO # 8801190089 PAGE: 1 of 1

PSE&G
Public Service Electric and Gas Company P.O. Box L Hancocks Bridge, New
Jersey 08038
Hope Creek Operations

January 6, 1988

U. S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

Dear Sir:

HOPE CREEK GENERATING STATION
DOCKET NO. 50-354
UNIT NO. 1
LICENSEE EVENT REPORT 87-051-00

This Licensee Event Report is being submitted pursuant to the requirements of 10CFR50.73(a)(2)(iv).

Sincerely,
/s/ S. LaBruna/Jan
S. LaBruna
General Manager
Hope Creek Operations
AME:
Attachment
SORC Mtg. 87-181
C Distribution

The Energy People

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